Summary of the Proposed Amendment to the Basin Plan Revising the Instream Water Quality Objectives for Water Temperature and Dissolved Oxygen Concentrations in the North Coast Region

The North Coast Regional Water Quality Control Board (Regional Board) is proposing an amendment to the water quality objectives for water temperature and dissolved oxygen contained in the *Water Quality Control Plan for the North Coast Region* (Basin Plan). The current objectives are not protective of the beneficial uses related to anadromous salmonids because they are not directly linked to the biological requirements of salmonid life stages. The proposed amendment would revise the existing objectives for water temperature and dissolved oxygen to be fully protective of salmonids by providing specific biologically based objectives for each salmonid life stage.

Need for Revising the Existing Objectives

In an August 2000 review of Russian River water quality objectives for the protection of salmonid species prepared for the Sonoma County Water Agency, Regional Board staff found that the dissolved oxygen and water temperature objectives for the Russian River Basin, among others, did not afford adequate protection for species listed on the State and Federal Endangered Species Acts (ESA/CESA). In order to address this, Regional Board staff recommended developing numeric objectives specific to each salmonid life stage. The US Environmental Protection Agency also found the current water temperature objectives in the Basin Plan were too general to be protective of the salmonids, and informed the State Water Resources Control Board of this issue in May 2000. These conclusions were confirmed by the literature review performed for this Basin Plan Amendment.

Along with compliance with ESA/CESA, the amendment to water temperature and dissolved oxygen objectives in the Basin Plan is needed to satisfy the requirements of the state Porter Cologne Water Quality Control Act (Porter Cologne). Staff incorporated the requirements of ESA/CESA and Porter Cologne by proposing objectives that are focused on protecting high quality salmonid habitat. A viable population of salmonids, a concept central to ESA listing and delisting, is dependent on high quality instream habitat. Likewise, the protection of high quality instream habitat protects the salmonid related beneficial uses of the North Coast Region, a requirement of the Basin Plan as intended in Porter Cologne.

Proposed Basin Plan Amendment:

The proposed amendment responds to the deficiencies in the water temperature and dissolved oxygen objectives by establishing numeric objectives that support the life stages of anadromous salmonids in compliance with ESA/CESA. The proposed Basin Plan amendment provides both numeric objectives as a baseline for protecting beneficial uses and narrative objectives as a mechanism for addressing circumstances where the numeric objectives may be inappropriate. The narrative objectives for both water temperature and dissolved oxygen would apply instead of the numeric objectives when it

is shown that the natural potential of a specific stream or stream reach is different than the proposed objectives.

The proposed amendment includes:

- Numeric water temperature objectives based on the biological requirements of the various life stages of salmonid species in the North Coast Region. When met, the numeric objective will provide a reasonable assurance, in accordance with the Porter Cologne, that the beneficial uses will be protected.
- Revised dissolved oxygen objectives also based on the biological requirements of salmonids.
- A narrative objective for dissolved oxygen that addresses locations where the numeric objectives are not achievable under natural conditions.
- An exception to the water temperature objectives to accommodate unusually warm air temperatures.
- A variance for situations where water temperatures and/or dissolved oxygen concentrations different from the proposed objectives are more appropriate for protection of beneficial uses.
- A prohibition related to the protection of cold water refugia.
- An implementation plan that outlines regulatory mechanisms for achieving compliance with the proposed objectives.

Proposed Water Temperature Objectives:

The proposed water temperature objectives are shown in the table below and are categorized by life stage. Note that the objectives are the same for all salmonid species, except those that apply to the coho salmon incubation/emergence life stage. The time periods in the table are provided to give an idea of when the various life stages occur, and are intended to be adapted to site-specific conditions.

Life Stage	Time Period (Estimated)	MWAT (C/F)	MWMT (C/F)	Inst. Max (C/F)
Adult Migration	August-July	15/59	17/62.6	21/69.8
Adult Holding	May-Dec	14/57.2	16/60.8	21/69.8
Spawning Salmonids	Sept-April	11/51.8	13/55.4	22/71.6
Incubation/Emergence All Salmonids exc. Coho Salmon	Nov-May	11/51.8	13/55.4	22/71.6
Incubation/Emergence Coho Salmon	Nov-March	10/50	12/53.6	22/71.6
Juvenile Rearing	year round	15/59	17/62.6	22/71.6
Smoltification	January-June	12/53.6	14/57.2	22/71.6

Proposed Water Temperature Objectives for Sensitive Species in the North Coast Region Organized by Life Stage

MWAT – maximum weekly average temperature:
Defined as the highest 7-day moving average of equally spaced water temperature measurements for a given time period. In this application, the time period is the duration of the existing salmonid life stage.

MWMT – maximum weekly average of the daily maximum temperatures:
Defined as the highest 7-day moving average of the daily maximum water temperatures for a given time period. The time period is the duration of the existing life stage.

For the MWAT and MWMT objectives, the water temperatures in the stream may not exceed the numeric objective for every 7-day period during the given life stage. The instantaneous maximum objective many not be exceeded at any time.

Proposed Dissolved Oxygen Objectives:

The following numeric dissolved oxygen objectives apply in North Coast Region waterbodies:

Year round objective in the water column- A seven-day moving average of the daily minimum concentrations equal to or greater than 8 mg/L.

Water column objective during the incubation/emergence life stage – A seven-day moving average of the daily minimum concentrations equal to or greater than 11 mg/L.

Intergravel objective during the incubation/emergence life stage – A seven-day moving average of the daily minimum concentrations[1] equal to or greater than 8 mg/L.

To account for the loss of dissolved oxygen associated with its transfer to the spawning gravels, a higher water column concentration is necessary during the incubation and emergence life stage. The Regional Board assumes that the difference between the water column and intergravel concentrations is 3 mg/L. The water column objective is subject to change if 1) site-specific research indicates a difference other than 3 mg/L and 2) intergravel dissolved oxygen concentrations are greater than 8 mg/L.

The proposed narrative dissolved oxygen objective:

The natural potential dissolved oxygen concentration of a waterbody shall not be altered unless it can be demonstrated, to the satisfaction of the Regional Board, that such alteration does not adversely affect beneficial uses.

Prohibition Concerning Cold Water Refugia:

Water temperatures in water serving as cold water refugia may not be increased.

Cold water refugia are defined as patches of cool water habitat used by sensitive aquatic species to escape elevated ambient stream temperatures. Examples of cold water refugia include deep pools, cool springs, subsurface flow, and the junction of cooler tributary systems.

Application of the Objectives:

The proposed water temperature and dissolved oxygen objectives apply when and where the life stage is occurring, or has occurred historically and has the potential to occur again. Where multiple life stages are present, the objectives associated with the most sensitive life stage apply. The objectives also apply in tributary waters, regardless of fish presence because of the continuity of stream temperatures in a watershed. Activities that have the potential to increase water temperature or decrease dissolved oxygen levels must comply with the State and Federal Antidegradation Policies.

Implementation:

The actions necessary to achieve the new objectives are discussed in the Implementation Plan section of this document. The Implementation Plan accompanies the proposed objectives and is required by the Porter-Cologne Water Quality Control Act. In the Porter-Cologne, the basic elements of an implementation plan are described as: (1) actions that will achieve the objectives, (2) a time schedule for achieving them, and (3) a description of monitoring for progress towards that end.

The implementation plan includes both regulatory function and land management policies that address the impacts of development. Because of the diversity of impacts in the North Coast Region, many impacts will need to be addressed on a site-specific basis using the Implementation Plan as a guide. To this end, the Implementation Plan outlines principles relevant to achieving the proposed objectives to be used in site-specific restoration and regulatory efforts such as TMDL implementation.

The implementation plan also provides guidance on meeting the requirements of the narrative objective thus allowing the flexibility to address site specific circumstances where the application of the numeric objectives may be inappropriate.